FLIGHT READINESS STATEMENT
STS-63/ET-68 AND STS-67/ET-69 DELTA
EXTERNAL TANK PROJECT REVIEW

EXTERNAL TANKS ET68 AND ET69, AS IDENTIFIED IN THE EXTERNAL TANK PROJECT DELTA FLIGHT READINESS REVIEW DATED DECEMBER 21, 1994, ARE CONSIDERED READY TO SUPPORT FLIGHT UPON ACCEPTABLE DISPOSITION OF OPEN WORK AND/OR OPEN ACTIONS.

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For J. EHL/CR01

J. STRICKLAND/EL01

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M. SMILES/CR70

P. V. COUNTS/SA31, CHAIRMAN

December 13, 1994

Space Shuttle
External Tank

Delta ET Project

STS-63/ET-68
STS-67/ET-69
Flight Readiness Review

MARTIN MARIETTA
MANNED SPACE SYSTEMS

Agenda

• ***Overview***	***Jim Feeley***
• ***Prior Mission Performance Summary***	
• ***Mission/External Tank Highlights***	
• Changes: No new items	
• Senior Management Review NCDs: None	
• SRM&QA Assessment	Frank Ramsey
• KSC Processing	Al Sayers
• Verification/Certification	Jim Feeley
• Mission Unique Assessment	
• Readiness Statement	
• Appendices	
- A: Minor Changes	
- B: SRM&QA Assessment	
- C: KSC Processing	
- D: Previously reviewed material	

Overview

- Review covers changes/differences/non-conformances not previously flown and/or reviewed

- This Delta review for STS-63/ET-68 and STS-67/ET-69 includes:
  - Prior mission performance summary
  - Items not previously addressed at the Block 11 ET Project FRR
  - Items specific to mission STS-63 and STS-67
  - Details of previously addressed items are available in appendix D

• **FRR Series**	**STS-63/ET-68**	**STS-67/ET-69**
- Block 11 ET Project (ETs 66-70)	8/10/94	8/10/94
- Mission Specific Reviews		
• ET/SRB Mate	11/7/94	12/12/94
• S&MA Pre-flight Assessment	12/9/94	12/9/94
• Delta ET Project (Baseline)	12/13/94	12/13/94
• Associate Administrator FRR	1/19/95	2/9/95
• Mission Management Team (L-2 Day)	1/31/95	2/28/95

Mission STS-66/ET-67 Performance Summary

Launch 11/3/94

System	Performance
OMRSD/LCC	No violations
Instrumentation	No violations
MPS	Nominal - LO2 stop flow/revert was performed during replenish to switch out faulty loading console. Flow was resumed in 24 minutes without incident
Hazardous Gas	Nominal
TPS	Nominal
ET Disposal	Nominal
Orbiter Tile Damage	Lower Surface • >1" = 22, slightly above average • Total = 111, slightly above average
Post Separation Photos	• Crew - Inconclusive due to poor visibility and lighting • Umbilical well - Three areas of missing foam on +Z Intertank stringer hats - Similar to previous observation on STS-58/ET-57 (IFA STS-58-T-001) - Enhancements implemented on ET-74 and subs to resolve missing Intertank foam

MARTIN MARIETTA
MANNED SPACE SYSTEMS

Mission/External Tank Highlights

Mission	STS-63	STS-67
• **Launch**	2/2/95	3/2/95
- Window	00:40 - 00:45 EST	TBD
- Pad	B	A
- Orbiter	Discovery (OV-103)	Endeavour (OV-105)
- Orbital inclination	51.6° - Insertion at 170NM	28.45° - Insertion at 190NM
- ET photo coverage	• Crew photos from cockpit window	• Umbilical well cameras • Crew photos from cockpit window
• **Primary payload**	• SPACEHAB-3 • MIR rendezvous without docking	ASTRO-2
• **Landing**	2/10/95	TBD
- Time	04:54 EST	TBD
- Location	KSC	KSC

External Tank	ET-68	ET-69
• DD250 Acceptance	8/6/93	11/3/93
• Shipped to launch site	7/21/94	9/15/94

MARTIN MARIETTA
MANNED SPACE SYSTEMS

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Changes - List

Description

- **Previously presented at Block 11 FRR, 8/10/94** (included in Appendix D)
  - **ET-68:** None
  - **ET-69**
    - Revised MAF acceptance test requirement to document verification of ICD requirement for level sensor electrical harness resistance (B01643J)
- **New items since Block 11 FRR:** None

Agenda

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SRM&QA Assessment

as of 12/5/94

Item	Status	
• **Alerts**	None	
• **MRB Assessment**	Complete - No issues/no impact to hazard controls	
	STS-63/ET-68	**STS-67/ET-69**
- MRB NCD Items	486	475
- PR/MRBs	3	1
• **Hazard Assessment**	Complete - All hazard reports were re-assessed and hazard controls verified	
• **Corrective Action Problem Summary (CAPS)**	Discussed on subsequent chart	

Corrective Action Problem Summary (CAPS)

Item	Vehicle Clearance	Status
E-159, Approved flight hardware changes on 81L2-X connectors not reported on COQs	• None required - No hardware failure • This is a discretionary CAPS to document the activities and corrective actions implemented • Connectors have successfully passed re-qualification testing	• CAPS in work at MAF - ECD 6/14/95

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• ***KSC Processing***	***Al Sayers***
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KSC Processing - Status

as of 12/5/94

- **Discrepancy Reports (DRs)/Problem Reports (PRs) Review**
  - All PR/MRB * discrepancies/dispositions similar to previously flown vehicles and are within existing database
  - All MRBs have been reviewed by MAF Reliability for potential SMR

- **Limited Life Component/ET Status ***
  - All within required life through scheduled launch date plus 90 days

- **OMRSD Exceptions/Waivers:** None

• **Changes**	STS-63/ET-68	STS-67/ET-69
- ET modifications		
• Mod Kit	0	0
• DC&R (Discrepancy Check and Report)	0	0
• Bldg 45	0	0
• FEC (Field Engineering Change)	1	0
- Software *	2	2
• SIM Load	1/18/95	2/10/95
• SIM Launch	1/14/95	1/24/95

* Included in Appendix C

MARTIN MARIETTA
MANNED SPACE SYSTEMS

Agenda

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MARTIN MARIETTA
MANNED SPACE SYSTEMS

Verification/Certification

Item	Status
• **NSTS 07700, Volume X Baseline** - Revision L, Change 205	**No constraints**
• **Certification documentation** - Hardware Certification Sheets (HCS) - Certificates of Qualification (COQ)	**Complete - No issues**
• **Waivers/Deviations**	**Complete - No issues**

Mission Unique Assessment

as of 12/5/94

Category/Item	STS-63/ET-68	STS-67/ET-69
• **Vehicle loads**	ECD 12/23/94	ECD 1/23/95
• **Thermal assessment** - Ascent - Intact abort and reentry	ECD 12/9/94	ECD 1/9/94
• **Review of MRB actions using updated loads and environmental data**	ECD 12/23/94	ECD 1/23/95
• **MPS Preflight Prediction Package**	ECD 1/23/95	ECD 2/20/95

ET-68 Readiness Statement

The External Tank, ET-68 is hereby certified and ready for STS-63 flight pending completion/closure of open and planned work

Jon A. Dutton
Vice President, External Tank Project
Martin Marietta Manned SpaceSystems

MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-69 Readiness Statement

The External Tank, ET-69 is hereby certified and ready for STS-67 flight pending completion/closure of open and planned work

Jon A. Dutton
Vice President, External Tank Project
Martin Marietta Manned Space Systems

MARTIN MARIETTA
MANNED SPACE SYSTEMS

Appendices

- A: Minor Changes
- B: SRM&QA Assessment
  - NCD Assessment Criteria
- C: KSC Processsing
  - Processing/Planned Work Schedules
  - PR/MRB Summaries
  - OMRSD Exceptions/Waivers: None
  - Limited Life Components
  - Modification Summary/Status
  - Software Changes
  - Software Verification/Validation Process
- D: Previously reviewed material
  - Changes
  - SMR NCDs: None
  - Waivers/Deviations

Class I/II or JS/DCN Changes

- Class I/II JS DCN changes that have been reviewed by MSFC S&E Resident Manager's Office
- All Class II STP/STM/Standards changes have been reviewed by MSFC M&P Lab
- These changes are acceptable for flight and summarized in this appendix (presentation not required)
  - Presentation criteria - Selection for presentation based on changes affecting:
    - Processes
    - Configuration
    - Material
    - Alternate Hardware
  - Presentation rejection criteria - All changes that do not affect configuration, material or processes
    - Revise Point of Incorporation
    - Drawing Clarification
    - Non-Flight Hardware Installation/Removal
    - Datum Changes
    - Update Usage/List of Materials (L/M)
    - Drawing Incorporation Errors
    - Manufacturing Aid
    - Drawing Errors
    - Fastener Type/Grip
    - Tolerance Change
    - Productivity
    - Minor changes taken care of by initial release of Class I Change (Same categories as above)

Class I/II or JS/DCN Changes-List

Change No.	Description
Systems	
H34809-907	Revised walking load limit drawing to callout correct tool numbers for protective mats
TPS	
H34809-947	Revise post build acceptance manuals to add in-process rework criteria for flange lapping and clarified acceptance criteria for raised metal on aluminum parts

Class I/II or JS/DCN Changes - List, Materials

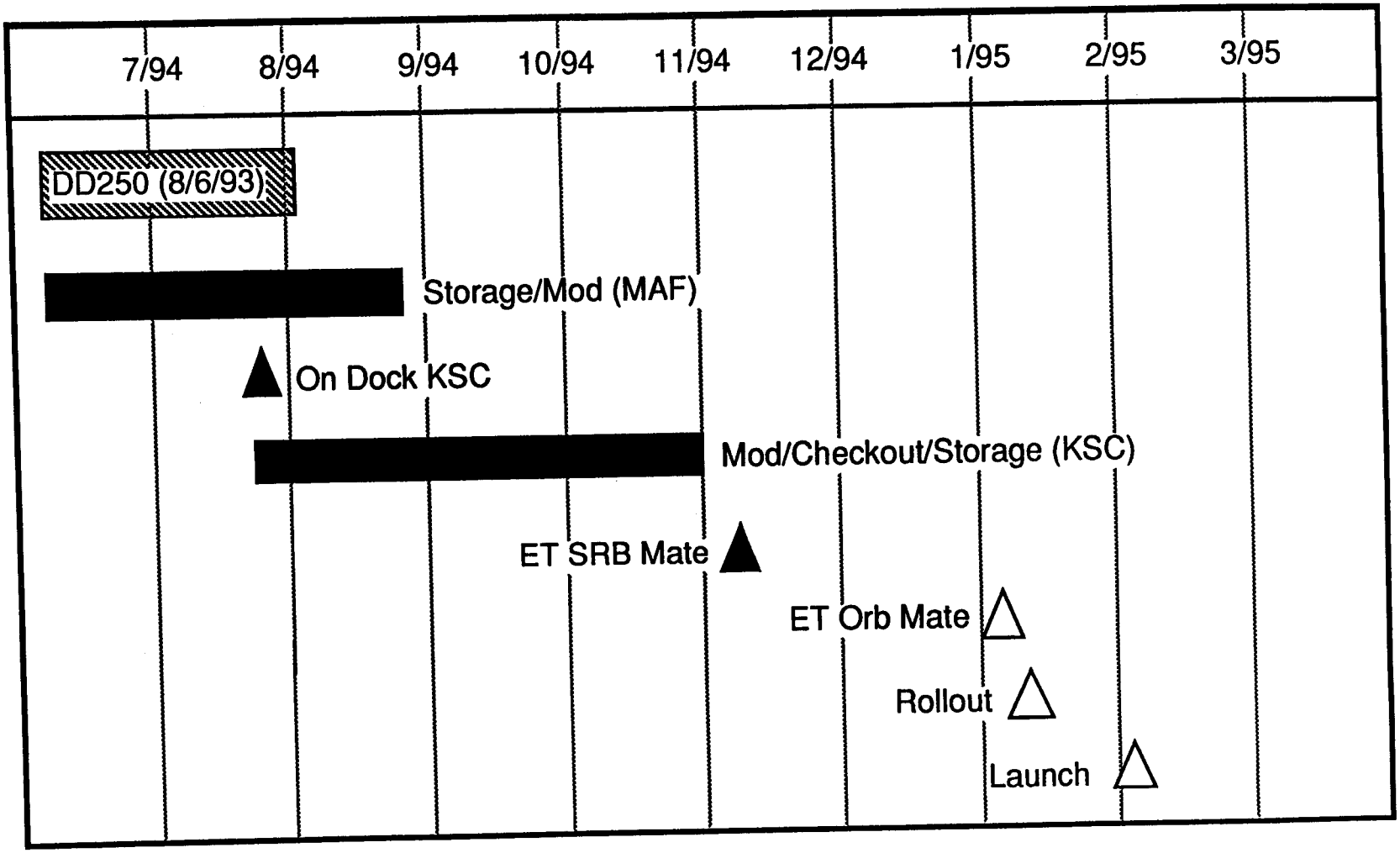
Change No.	Description
H34809-938	Revise Y933, Y934, Y936 and Y981 material code sheets and STMs to allow use of IPA to verify cleanliness of materials since freon PCA will no longer be available to verify cleanliness of parts
H34809-952	Revise appendix to J463 and J476 material code sheets to reflect vendor designation change
H34809-962	Revise STP 2001 to eliminate rivet head height measurements
H34809-965	Revise Y320 appendix to allow use of Y498 nitrogen when tests show that the purity requirements of Y320 are met
H34809-967	Revise STP 3503 to observe bubble leak checks from eight feet when access platforms do not permit observation from three feet
H34809-968	Editorial clarifications to STPs 5008,5009,5011, and 5017 - Added generally clean definition and revised TCE handling precautions
H34809-982	Revise Y476 material code sheet appendix to delete AWS revision level from code sheet
H45001-410	Revise 26L24 fastener upper temperature limit to be consistent with thermal analysis
H50001-754	Revise STP 6001 to clarify adhesive bonding hardness test methodology
H50001-757	Revise STP 2001 to allow manufacturing to cut rivets to length and to prohibit punched holes in Al-Li

NCD Assessment Criteria

- Assessment of all MRB NCD Items
  - Adequacy of technical dispositions
  - Completeness of required repair/retest
  - First time occurrences/SMR
  - Verification of margin of safety assessment/documented
  - Review of impact to hazards
  - Engineering review for impact to loads

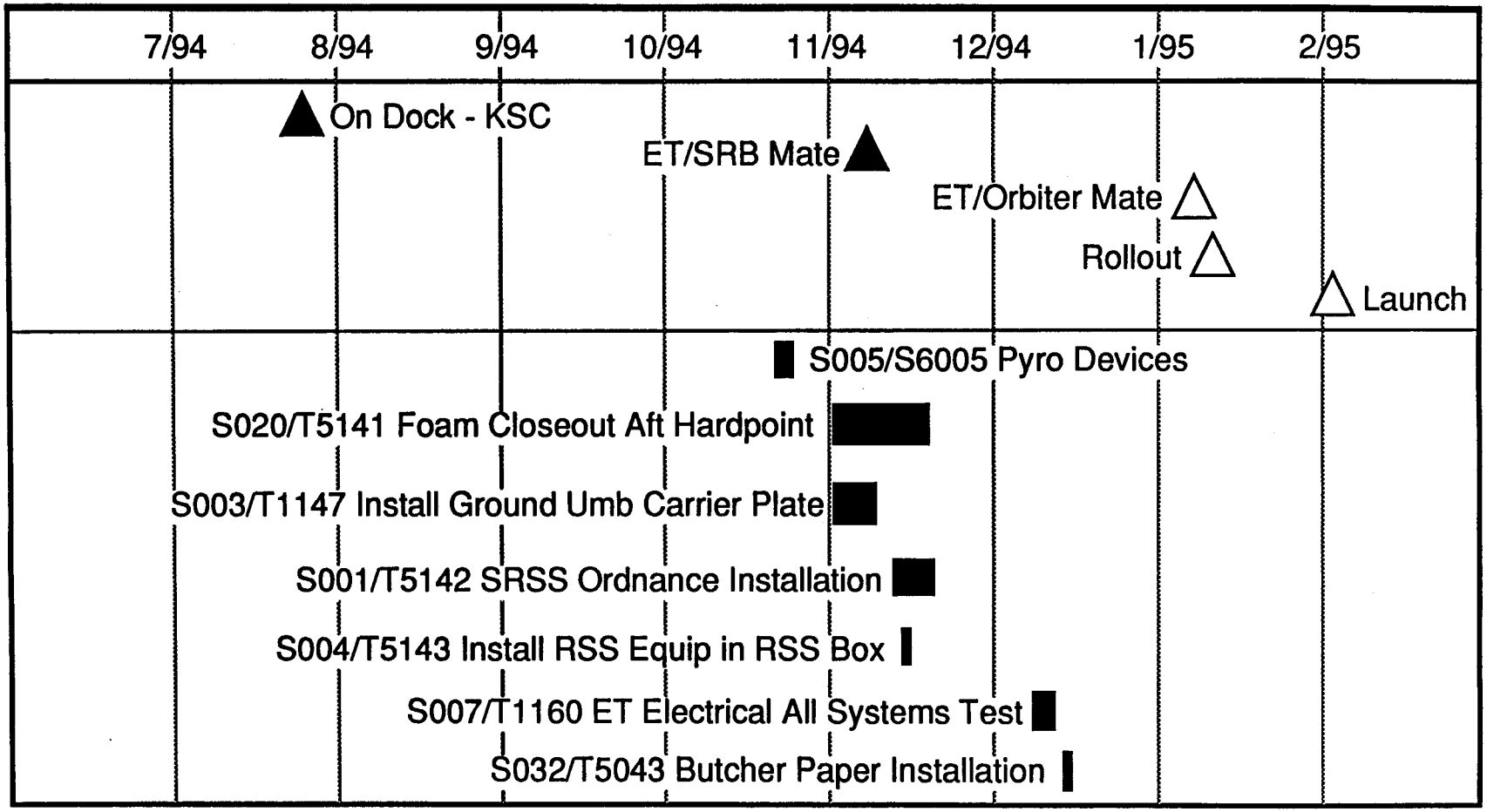
ET-68 Processing Schedule

C1

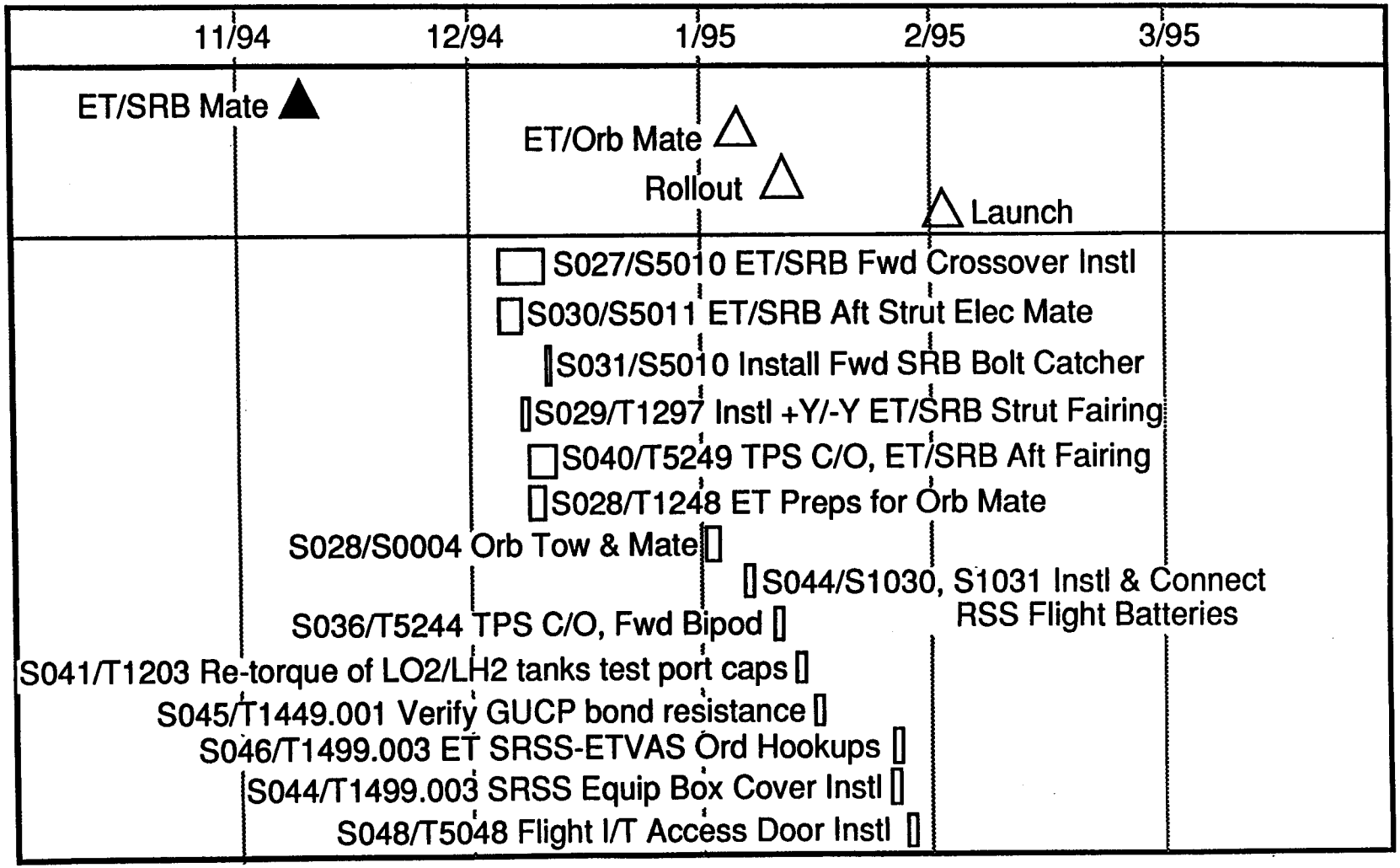


MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-68 Planned Work



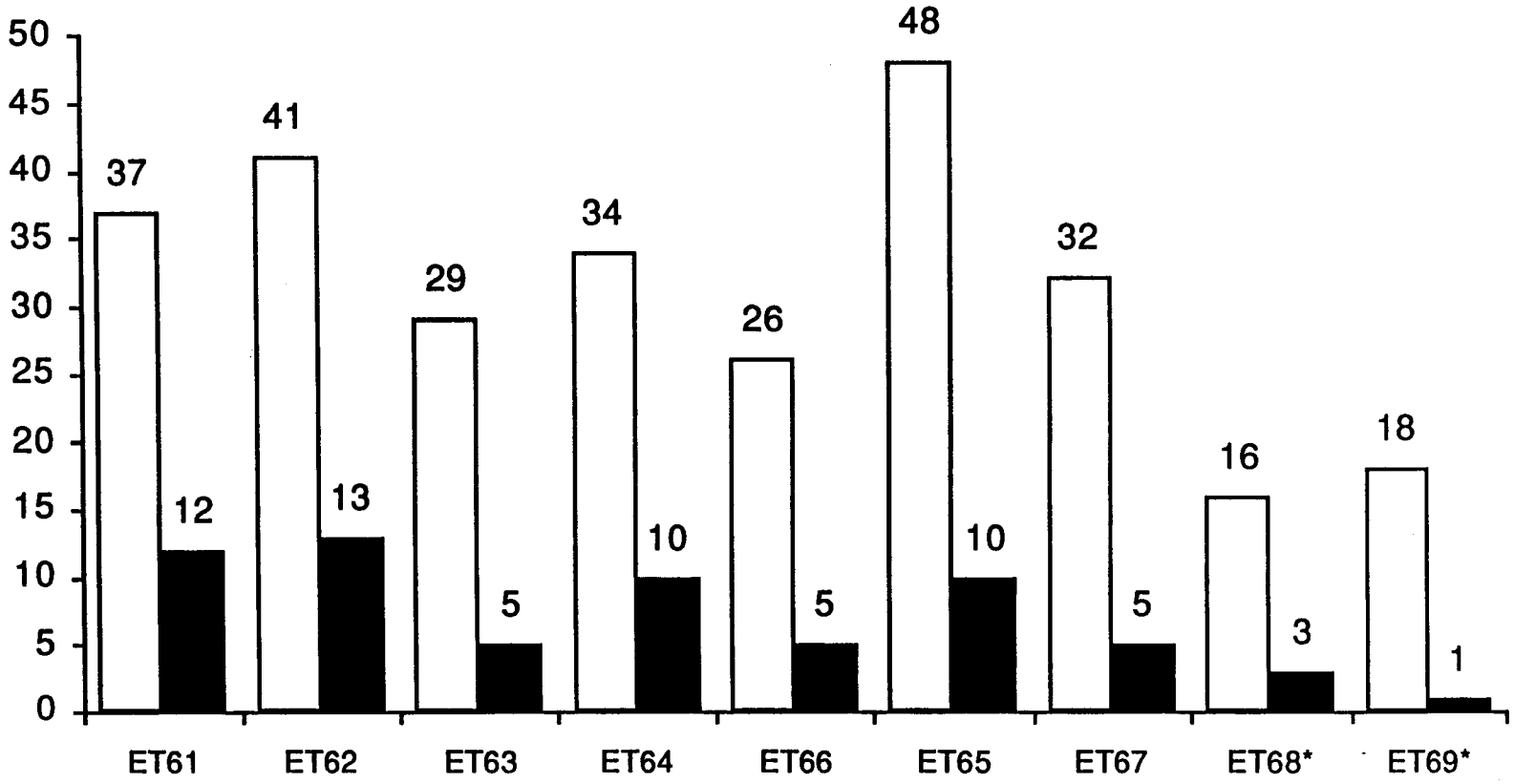
ET-68 Planned Work



MARTIN MARIETTA
MANNED SPACE SYSTEMS

PR/MRB History

(1994 - 1995)



*Incomplete data

□ Total PRs

■ Total MRBs

MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-68 DR/PR/OMRSD Exception/Waiver-Summary C5

as of 12/5/94

	Discrepancy	Problem	MRB Items		Waivers/Exceptions	
System	Total	Total	Total	Open	Total	Open
• Electrical	0	0	0	0	0	0
• Propulsion/ Pneumatics	1	3	1	0	0	0
• Range Safety	0	0	0	0	0	0
• Structures	1	8	1	0	0	0
• Thermal (TPS)	2	13	1	0	0	0
Total	**4**	**24**	**3**	**0**	**0**	**0**

MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-68 PR/MRBs - Summary

PR No./Status	Title/Description	Disposition
Structures		
PET-68-ST-0006 Closed	Conathane stored out of temperature requirements • Used in third hardpoint closeout and Intertank sense port PDL repair applications	• Use as is - Verification of thickness and cure ensures no anomalous conditions (i.e. crystallization or viscosity increase)
Propulsion		
PET-68-FP-0003 Closed	Roller arm to roller arm housing gap is too close • Actual: 0.002" • Requirement: ≥0.003"	• Filed housing to meet gap requirement and use as repaired
TPS		
PET-68-TS-0012 Closed	Crushed BX-250 foam forward of bipod spindle • Actual: 0.375" • Requirement: ≤0.100"	• Use as repaired - Removed loose foam • Within accepted ice/frost area

ET-68 Limited Life Components

Cycle Sensitive

Description	Part No.	Serial No.	Limit	Required	Remaining
LH2 Manhole Cover Assy	80914081488 -019	00000192	100	1	100
LO2 Tank Mechanical Assy	80912002000 -019	00000061	100	1	100
LH2 Tank Mechanical Assy	80912004000 -019	00000061	100	1	100
LO2 Manhole Cover Assy	80911001205 -010	00000161	100	1	100
LO2 Fwd Ogive Cover Plate	80911001207 -029	00000197	100	1	100
LH2 Manhole Cover Assy (Aft Dome)	80911001444 -010	00000348 00000350	100 100	1 1	100 100

ET-68 Limited Life Components

Age Sensitive

Description	Part No.	Serial No.	Limit	Initiation	Expiration
External Tank	80901000000 -269	00000060	6 Yrs	1/93	1/99
RSS Battery A	10406-0133 -801	---	2 Yrs 90 Days		
RSS Battery B	10406-0133 -801	---	2 Yrs 90 Days		

ET-68 Limited Life Components

Age Sensitive Pyrotechnics - 10 Years Life/Requires Lot Verification Tests After 4 and 7 Years

Description	Part No.	Lot No.	Serial No.	Latest Retest	Expiration
Confined Detonating Fuse	10315-0002				
	-825	AAB	304	1/92	3/96
	-826	AAB	257	1/92	3/96
	-827	AAB	215	1/92	3/96
	-828	AAB	171	1/92	3/96
	-831	AAB	447	1/92	3/96
Confined Detonating Fuse Manifold	10312-0002-803	AAT	2002124	11/94	3/98
		AAT	2002137	11/94	3/98
Safe & Arm Device	10311-0001-803	AAG	1000322	6/91	8/95
NSD	SEB26100094	JHR	0011	8/92	8/96
	-201	JHR	0012	8/92	8/96

MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-68 Limited Life Components

Age Sensitive Pyrotechnics - 10 Years Life/Requires Lot Verification Tests After 4 and 7 Years

Description	Part No.	Lot No.	Serial No.	Latest Retest	Expiration
Separator Assy GUCP	PD500020 -059	AAF	0000815	5/92	4-Yr, 5/96
Cartridge Assy	PD500020 -030	AAF	69951	5/92	4-Yr, 5/96
		AAF	69952	5/92	4-Yr, 5/96
Linear Shaped Charge	PD500016 -050	AAJ	0001570	6/91	4-Yr, 6/95

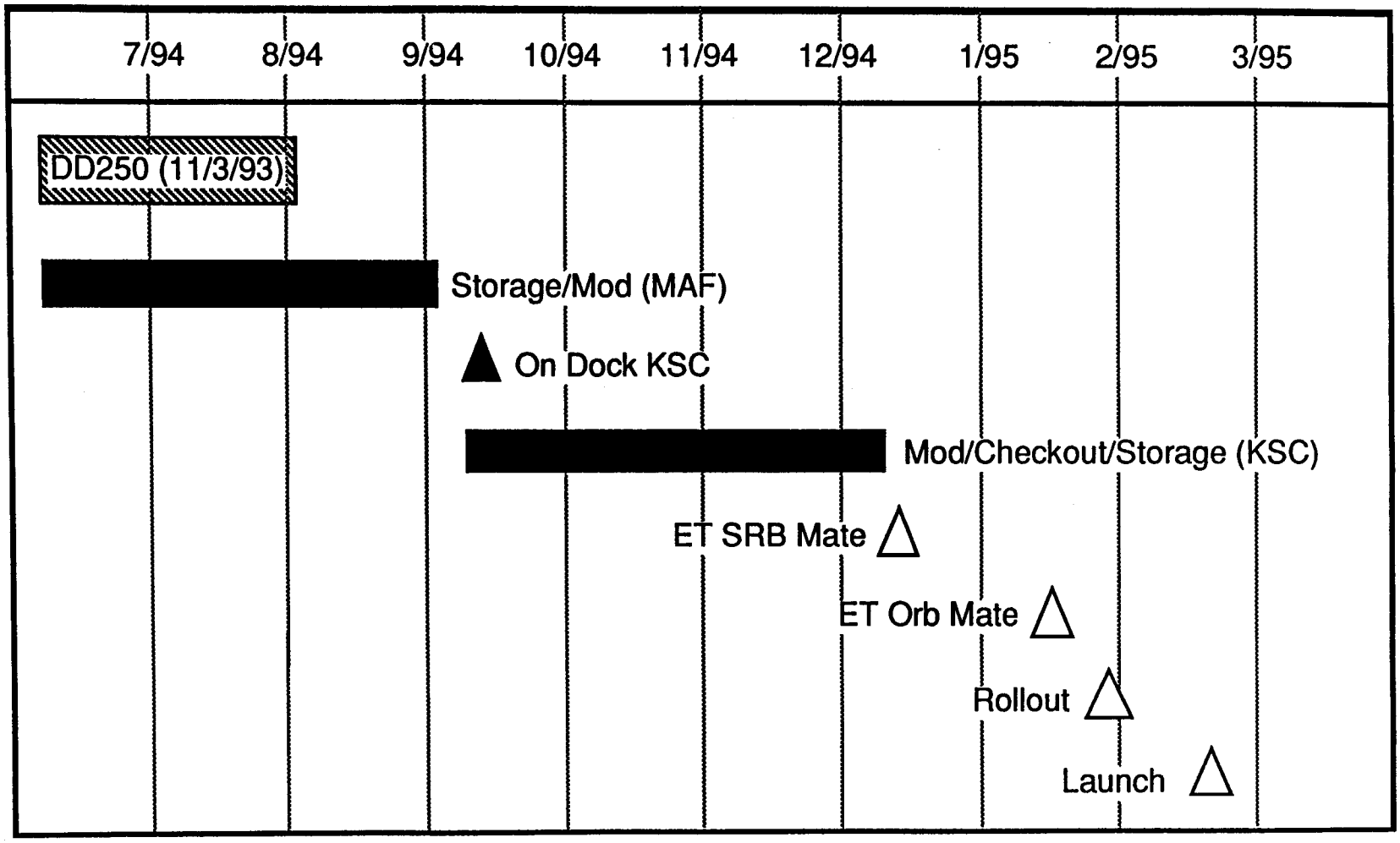
ET-68 Modification Summary

No.	Description	Status
FEC		
KET-0028	Inspect/relocate CDF assembly in ET Intertank	Complete - No adjustment required

Software Changes

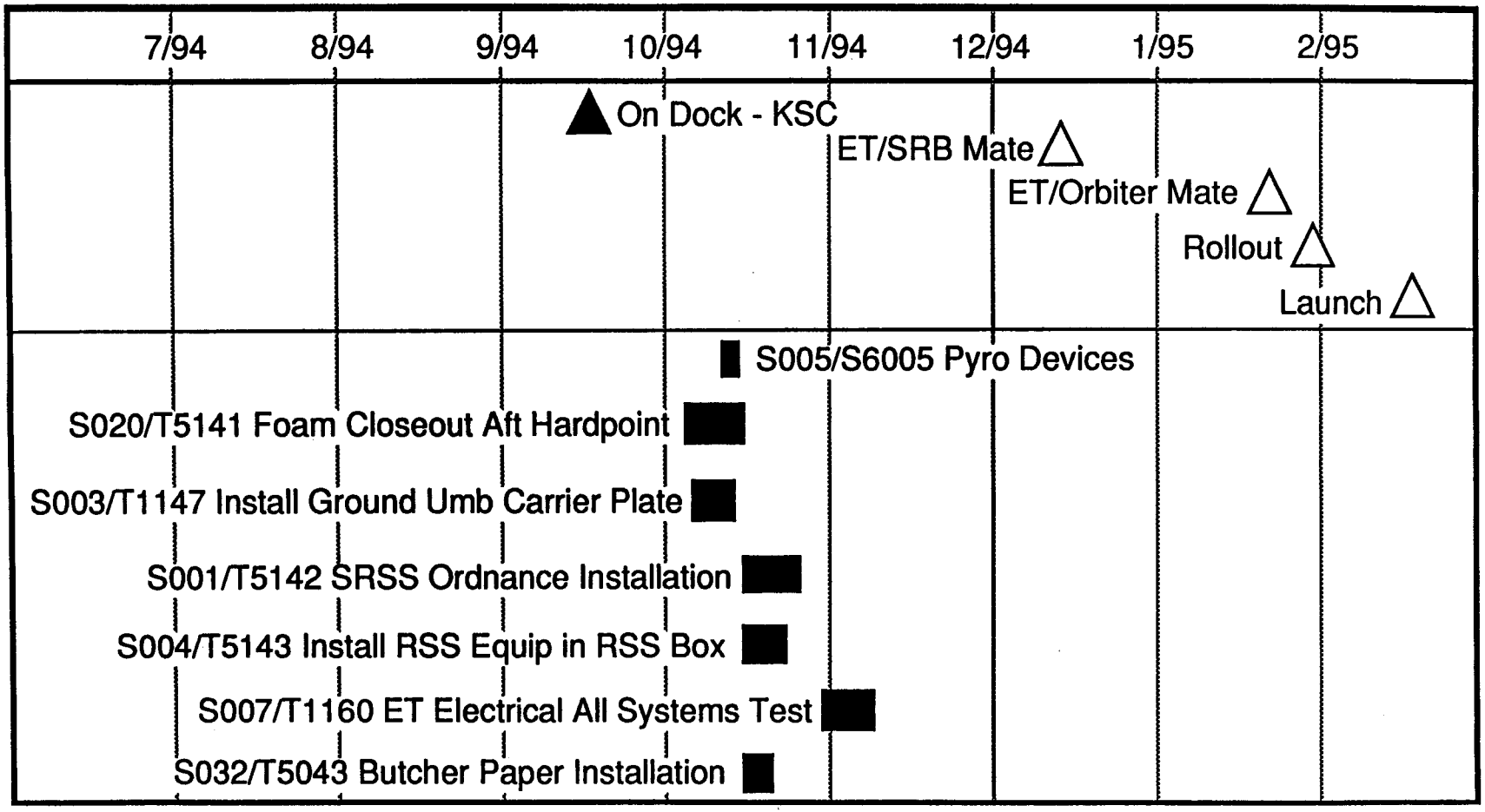
Description	Reason	Status
• Change GUCP cavity purge from 600-850 psig to 700-800 psig (RCN SS12012M)	• OMRSD limits for the GUCP cavity purge pressure were revised to be consistent with the ICD	• Approved
• ET bipod heater logic software for instrumentation validity verification in GLS (ESR K89181)	• Automates an exsisting contingency procedure - Could prevent a single failure in instrumentation from stopping the Ground Launch Sequencer at T-31 sec	• Approved

ET-69 Processing Schedule

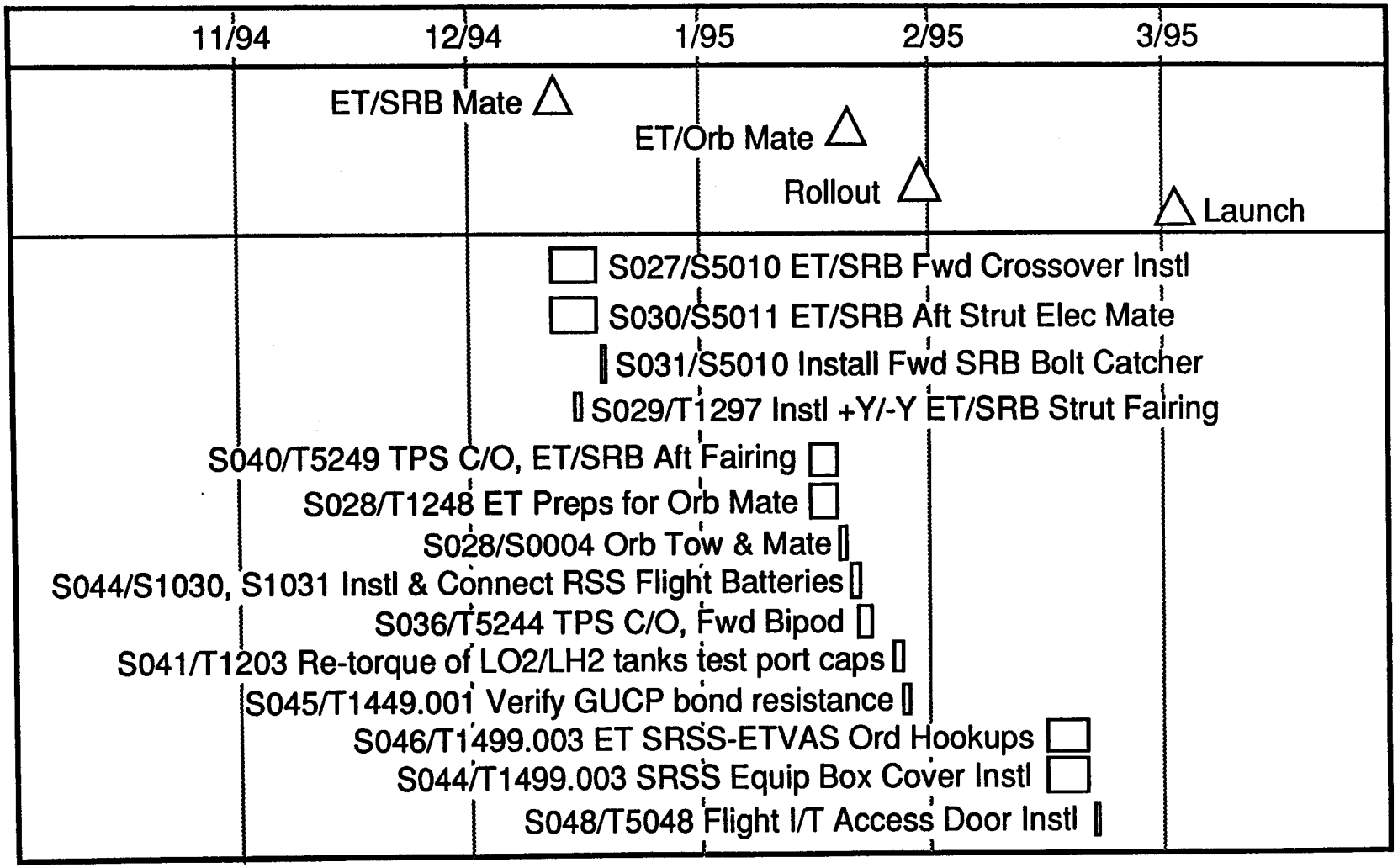


MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-69 Planned Work



ET-69 Planned Work



MARTIN MARIETTA
MANNED SPACE SYSTEMS

ET-69 DR/PR/OMRSD Waiver/Exception-Summary C16

as of 12/5/94

	Discrepancy	Problem	MRB Items		Waivers/Exceptions	
System	Total	Total	Total	Open	Total	Open
• Electrical	1	1	0	0	0	0
• Propulsion/ Pneumatics	0	1	0	0	0	0
• Range Safety	0	0	0	0	0	0
• Structures	3	10	1	0	0	0
• Thermal (TPS)	3	6	0	0	0	0
Total	**7**	**18**	**1**	**0**	**0**	**0**

ET-69 PR/MRBs - Summary

PR No./Status	Title/Description	Disposition
Structures		
PET-69-ST-0002 Closed	Nick on forward edge of EB-3/5 upper ET/SRB fitting (0.055" L x 0.041" W x 0.003" D)	• Use as is - Removed raised metal - No crack or cracklike indications under 5 to 10X magnification

ET-69 Limited Life Components

Cycle Sensitive

Description	Part No.	Serial No.	Limit	Required	Remaining
LH2 Manhole Cover Assy	80914081488 -019	00000193	100	1	100
LO2 Tank Mechanical Assy	80912002000 -019	00000062	100	1	100
LH2 Tank Mechanical Assy	80912004000 -019	00000062	100	1	100
LO2 Manhole Cover Assy	80911001205 -010	00000163	100	1	100
LO2 Fwd Ogive Cover Plate	80911001207 -029	00000198	100	1	100
LH2 Manhole Cover Assy (Aft Dome)	80911001444 -010	00000346 00000351	100 100	1 1	100 100

ET-69 Limited Life Components

Age Sensitive

Description	Part No.	Serial No.	Limit	Initiation	Expiration
External Tank	80901000000 -269	00000062	6 Yrs	11/93	11/99
RSS Battery A	10406-0133 -801	---	2 Yrs 90 Days		
RSS Battery B	10406-0133 -801	---	2 Yrs 90 Days		

ET-69 Limited Life Components

Age Sensitive Pyrotechnics - 10 Years Life/Requires Lot Verification Tests After 4 and 7 Years

Description	Part No.	Lot No.	Serial No.	Latest Retest	Expiration
Confined Detonating Fuse	10315-0002 -825	AAB	305	1/93	3/96
	-826	AAB	258	1/93	3/96
	-827	AAB	216	1/93	3/96
	-828	AAB	172	1/93	3/96
	-831	AAB	448	1/93	3/96
Confined Detonating Fuse Manifold	10312-0002-803	AAT	2002138	11/94	3/98
		AAT	2002139	11/94	3/98
Safe & Arm Device	10311-0001-803	AAG	1000367	6/91	8/95
NSD	SEB26100094	JHR	0616	8/92	8/96
	-201	JHR	0617	8/92	8/96

ET-69 Limited Life Components

Age Sensitive Pyrotechnics - 10 Years Life/Requires Lot Verification Tests After 4 and 7 Years

Description	Part No.	Lot No.	Serial No.	Latest Retest	Expiration
Separator Assy GUCP	PD500020 -059	AAF	0000817	5/92	4-Yr, 5/96
Cartridge Assy	PD500020 -030	AAF	69957	5/92	4-Yr, 5/96
		AAF	69959	5/92	4-Yr, 5/96
Linear Shaped Charge	PD500016 -050	AAJ	0001571	6/91	4-Yr, 6/95

MARTIN MARIETTA
MANNED SPACE SYSTEMS

KSC Software Revision Verification/Validation Process

- Software changes identified and approved by Technical Review Panel (TRP)

- Code changed and de-bugged against propellant loading model
  - Desk top review performed by MMC Software/Project Engineer

- Software Verification Procedures (SVP) revised by System Engineers

- Software Verification Process
  - Desk top review performed by SPC Quality Engineer
  - Automated "was/is" program listing produced and verified
  - Revised software loaded into simulation firing room
  - Software Verification Procedures (SVPs) performed to test changed code against propellant loading model *

*LO2/LH2 Main Propulsion System Models
- High fidelity
- Reflects system dynamics
- Provides simulation for:
  - Application software
  - De-bug/verification
  - Engineering training
  - Propellant loading

KSC Software Revision Verification/Validation Process

- Revised software
  - Used for
    - S0044, Simulated launch
    - S0056, Simulated load (Shuttle Propellant Load Countdown Simulation)
      - LO2/LH2 software all executing concurrently
      - Nominal and contingency operations simulated
      - Provides end-to-end software verification
  - Loaded into operational firing room for hardware use

Note: Unless indicated, both SPC and MMC/LSS personnel are involved in all operations

Level Sensor Harness IR (B01643J)

Change:

- Revised ET acceptance requirements to verify and record resistance on all LO2/LH2 liquid level sensor harnesses by test/analysis
  - LO2 - 0.6 to 9.5 ohms
  - LH2 - 0.1 to 6.5 ohms

Reason:

- Specific resistances of level sensor harnesses not recorded prior to LO2 and LH2 closeouts
  - Tested on a functional resistance acceptance basis

Basis for Certification:

- Review and analysis of test data on ETs prior to ET-69
- In process analysis/verification of resistance on all LO2/LH2 liquid level sensor harnesses for ET-69 and up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
NSTS 07700 Vol. V - Information Management Requirements				
Generic part name, type, common designation, and part manufacturer H4 code are not required for EEE parts status printout	S00127B 6/28/88	Table C.5 Item 2SR-10	6	ETs 49 & up
Data required in limited life status report is supplied in acceptance data packackage	S00127B 6/28/88	Table C.6 Item 2SR-7	8	ETs 49 & up
Requirement to deliver element pressure vessel historical data to EPO will remain at contractor facility	S00127B 6/28/88	Table C.6 Item 2SR-7	10	ETs 49 & up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
NSTS 07700 Vol. X - Space Shuttle Flight and Ground System Specification , Book 1 Requirements				
Electrical wiring of redundant systems NSTS 08080-1, 20A/4B	S40732G 6/18/88	Table 2.0	362	ETs 23, 27-29, 31 & up
Electrical bonding per MIL-B-5087B (2)	S040732M 9/9/88	3.6.14	378	ETs 23, 27-29, 31 & up
Soldering, circuit boards & connectors	S040732M 9/9/88	3.6.15.1.1	379	ETs 23, 27-29, 31 & up
PD7400106 circuit boards	S040732M 9/9/88	3.6.15.2.1	382	ETs 23, 27-29, 31 & up
PCM MUX and pressure transducer circuit boards	S040732M 9/9/88	3.6.15.2.1	383	ETs 23, 27-29, 31 & up
Range safety system compliance with AFETRM 127-1 and SAMTECM 127-1	S94934 9/10/88	3.5.4.12	388	ETs 28 & up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
NSTS 07700 Vol. X - Space Shuttle Flight and Ground System Specification , Book 1 Requirements				
CIL fail safe and redundancy requirements	S040201E 4/3/87	3.5.1.1.1 Thru 3.5.1.1.3	401	ETs 23, 27-29, 31 & up
2058 Fram, Bearing Stress	S40793H, H-R1 11/22/88	3.2.2.1.5.2	452	ETs 23, 27-29, 31 & up
Soldering of electrical connectors	S094779C 2/21/91	3.6.15.1.1	573	ETs 37, 41 & up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
NSTS 08060, Rev. F - System Pyrotechnic Specification				
Design pyrotechnics for reliability - No redundant tumble valve	S003422E 6/24/88	3.1	60	ETs 23, 27-29, 31 & up
Use 40M36298 connectors	S040732F 6/24/88	3.4.1	61	ETs 23,27-29, 31 & up
Epoxy to separate dissimilar metals on LSCs	S040732F 6/24/88	3.5.8	62	ETs 23, 27-29, 31 & up
Circuit resistance check not required after connector mate in tumble system	S040732F 6/24/88	7.3	63	ETs 23, 27-29, 31 & up
Prevent adverse effects of common mode currents	S040732F 6/24/88	8.2.1	64	ETs 23, 27-29, 31 & up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
NSTS 08060, Rev. F - System Pyrotechnic Specification				
Fire circuit wiring shall be routed separately	S040732F 6/24/88	8.2.3	65	ETs 23, 27-29, 31 & up
NSTS 07700-10-MVP-01 - Shuttle Master Verification Plan				
Environmental acceptance of ET components	S002130H 3/7/89	3.7.1	13	ETs 23, 27-29, 31 & up
NSTS 08123, Rev. B - Certification of Flexible Hoses and Bellows				
LH2 feedline bellows	S0052023G-R1 8/2/91	1.2	3	ETs 42 - 45, 47 & up

Level II Waivers - Baseline

Document/ Requirement	Authority	Paragraph	Waiver No.	Effectivity
SL-E-0001 - Specification Electromagnetic Compatibility Requirement				
Wire marking is not applicable to the ET	S40732K 9/27/88	3.2.5	3	ETs 23, 27-29, 31 & up
SW-E-0002 - Ground Support Equipment General Design Requirements				
Factor of safety applied to yield for GUCP leg	S87020L 8/17/88	3.4.2.1	21	ETs 23, 27-29, 31 & up